Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A system for the measurement, in real time, of the instantaneous flow of a fluid in steady or unsteady motion in a conduit, **comprising** ~~**characterised in that it includes**~~:

- a flow–velocity measuring device **[[(1)]]** placed in the conduit, where the said flow–velocity measuring device **[[(1)]]** is equipped with two pressure take–offs **[[(A, B)]]** in the wall,

- a pressure–difference measuring device **[[(2)]]** designed to be connected to two pressure take–offs **[[(A, B)]]**,

- a calculation resource **[[(3)]]** designed to calculate flow, in real time, by solving an equation that relates the instantaneous flow to the pressure difference, where the latter is positive or negative in the said equation depending on variations in the speed of fluid flow in the conduit and/or the direction of the fluid flow.

2. (Currently amended) A system according to claim 1, **wherein** ~~**characterised in that**~~ the equation includes a term representing the instantaneous flow, and a term representing the differential coefficient with time of the instantaneous flow, where each of these two terms can be positive or negative.

3. (Currently amended) A system according to claim 1, **wherein** ~~**characterised in that**~~ the equation taking account of the direction of the flow is a differential equation of the form:

$$dq(t)/dt + \alpha(q(t)) = \beta \times \Delta p(t),$$

where

$q(t)$ represents the wanted instantaneous flow,

dq(t)/dt	represents the differential coefficient with time of the wanted instantaneous flow,
$\alpha(q(t))$	represents a function that depends on the geometry of the system, of the fluid and of the flow q(t),
β	represents a coefficient that depends on the geometry of the device,
$\Delta p(t)$	represents the measured instantaneous pressure difference.

4. (Currently amended) A system according to claim 1, **wherein** ~~**characterised in that**~~ **the system** ~~**it**~~ also includes a temperature measuring probe.

5. (Currently Amended) A system according to claim **[[3]]** **4**, **wherein** ~~**characterised in that**~~ the calculation resource is designed to ascertain the density of the fluid by having the temperature measured by the temperature measuring probe and calculating the instantaneous mass flow of the fluid.

6. (Currently amended) A system according to claim 3, ~~**characterised in that it**~~ **wherein the system** also includes a probe for measuring absolute static pressure.

7. (Currently amended) A system according to claim 5, **wherein** ~~**characterised in that**~~ the calculation resource **[[(3)]]** is designed to calculate, in real time, the instantaneous mass flow of a fluid that is compressible in real time, by means of an absolute static pressure measurement and a temperature measurement, and by solving the equation relating the instantaneous flow to the pressure difference, where the said equation takes account of the direction of the fluid flow.

8. (Currently amended) A system according to claim 1, **wherein** ~~**characterised in that**~~ the flow–velocity measuring device is a narrowing tube.

9. (Currently amended) A system according to claim 1, **wherein** ~~**characterised in that**~~ the flow–velocity measuring device **[[(1)]]** is a diaphragm.

10. (Currently amended) A system according to claim 1, **wherein** ~~**characterised in that**~~ the flow–velocity measuring device **[[(1)]]** is a venturi.

11. (Currently amended) A system according to claim 1, **wherein** ~~**characterised in that**~~ the pressure difference measuring device **[[(2)]]** is a differential pressure sensor connected to the two pressure take–offs.

12. (Currently amended) A system according to claim 1, **wherein** ~~**characterised in that**~~ the means of measuring a pressure difference is a set of two relative pressure sensors connected to the two pressure take–offs.

13. (Currently amended) A system according to claim 1, **wherein** ~~**characterised in that**~~ the calculation resource **[[(3)]]** is an analogue or digital electronic calculator.

14. (Currently amended) A system according to claim 13, **wherein** ~~**characterised in that**~~ the calculation resource includes a first amplifier **[[(7)]]** connected to a first input of a subtractor **[[(8)]]**, an integrator **[[(9)]]** connected to an output of the subtractor **[[(8)]]**, a feedback loop connected between an output of the integrator **[[(9)]]** and a second input of the subtractor **[[(8)]]**, where the feedback loop includes a module **[[(10)]]** producing the absolute value function connected to the output of the integrator **[[(9)]]**, and a multiplier **[[(11)]]** which is connected by a first input to an output of the module **[[(10)]]** and by a second input to the output of the integrator **[[(9)]]**.

15. (Currently amended) A process for measuring the flow of a fluid in steady or unsteady motion in a conduit, **comprising** ~~**characterised in that it includes**~~ the following stages:

- measurement of a difference between two pressures, irrespective of fluctuations in the flow,

- calculation of the flow of the fluid by solving an equation relating the flow and the pressure difference, where the latter is positive or negative in the said equation depending on variation of the speed of the fluid flow in the conduit and/or the direction of the fluid flow.

16. (Currently amended) A process according to claim 15, ~~**characterised in that**~~ **wherein** the equation includes a term representing the pressure difference, a term representing the instantaneous flow, and a term representing the differential coefficient with time of the instantaneous flow, where each of these three terms can be positive or negative.

17. (Currently amended) A process according to claim 15, ~~**characterised in that**~~ **wherein** the second stage of the process consists of calculating the flow of the fluid in unsteady motion by solving a differential equation relating the flow and the measured pressure difference:

$$dq(t)/dt + \alpha(q(t)) = \beta \times \Delta p(t),$$

where

$q(t)$ represents the wanted instantaneous flow,

$dq(t)/dt$ represents the differential coefficient with time of the wanted instantaneous flow,

$\alpha(q(t))$ represents a function that depends on the geometry of the system, the fluid and the instantaneous flow $q(t)$,

β represents a coefficient that depends on the geometry of the device,

$\Delta p(t)$ represents the measured instantaneous pressure difference.

18. (Currently amended) A process according to claim 17, ~~**characterised in that**~~ **wherein** the direction of the flow is included in the term $\alpha(q(t))$ which depends on the geometry of the system and the flow q(t).

19. (Currently amended) A process according to claim 15, ~~**characterised in that**~~ **wherein the process** ~~**it**~~ also includes a stage for acquisition of the fluid temperature.

20. (Currently amended) A process according to claim 15, ~~**characterised in that**~~ **wherein the process** ~~**it**~~ also includes a stage for acquisition of the absolute static pressure of the fluid.

21. (Currently amended) A process according to claim 19, ~~**characterised in that**~~ **wherein** the fluid temperature and the absolute static pressure of the fluid are included in the equation taking account of the direction of the flow.

22. (Currently amended) A process according to claim 21, ~~**characterised in that**~~ **wherein the process** ~~**it**~~ allows the calculation, in real time, of the instantaneous flow of a compressible fluid in unsteady motion in a conduit, where the said flow calculation is **achieved** ~~**achieve**~~ by solving an equation relating the flow to the pressure difference, the absolute static pressure of the fluid, and the fluid temperature.

23. (New) A system for the measurement, in real time, of an instantaneous flow of a fluid in steady or unsteady motion in a conduit, comprising:

a flow–velocity measuring device located in the conduit, wherein the flow–velocity measuring device is equipped with two pressure take–offs in the wall,

a pressure–difference measuring device designed to be connected to two pressure take–offs, and

a calculation resource adapted to calculate in real time, flow by solving an equation that relates the instantaneous flow to the pressure difference, wherein the pressure difference is positive in the equation depending on variations in the speed of fluid flow in the conduit and/or the direction of the fluid flow, and wherein the pressure difference is negative in the equation depending on variations in the speed of fluid flow in the conduit and/or the direction of the fluid flow.